

## **DATA STRUCTURES AND STATE TRACKING FOR NETWORK PROTOCOL PROCESSING**

### **ABSTRACT**

Described are data structures, and methodology for forming same, for network protocol processing. A method for creating data structures for firewalling and network address translating is described. A method for creating data structures for physical layer addressing is described. A method for security protocol support using a data structure is described. A method for creating at least one data structure sized responsive to whether a firewall is activated is described. A data structure for routing packets is described. A method of forming hashing table chains is described. Additionally, method and apparatus for tracking packet states is described. More particularly, Transmission Control Protocol ("TCP") tracking of states for packets is described. In an embodiment, a division between software states and hardware states is made as a packet is processed by both software and hardware. Additionally, method and apparatus for network protocol processing are described. For example, a packet for network address translation having a media access control header is obtained, from which information, including the media access control header, is obtained. The information is parsed into one or more data structures. It is determined whether a network processing unit is in a first round processing mode, or a second round pass-through mode.